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ABSTRACT

This paper describes how educators can develop authentic enrichment clusters to provide highly engaging learning activities that make schools enjoyable places for gifted students. Part 1 of the paper discusses the importance of authentic learning, in which the student applies relevant knowledge, thinking skills, and interpersonal skills to the solution of real problems. Enrichment clusters are described as opportunities for non-graded groups of students to come together for approximately one-half day per week to focus on the production of a mutually agreed on product or service that will have an impact on an intended audience. Students are brought together because they share common interests that bind them together and a willingness to work cooperatively within a relatively unstructured learning environment. The teacher's role as the facilitator of the cluster is highlighted. Part 2 of the paper discusses two key issues in developing enrichment clusters: (1) ensuring that an enrichment cluster does not become a mini-course; and (2) the teacher's role in escalating the content level of a cluster. Part 3 provides an enrichment cluster planning guide and describes the individual steps for planning an authentic enrichment cluster and for writing a cluster description. (CR)

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• Persons who are already familiar with the enrichment cluster concept may want to proceed directly to Part II.

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How To Develop An Authentic Enrichment Cluster

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The whole process of education should thus be conceived of as the process of learning to think through the solution of real problems.

--John Dewey, 1936

Part I: Background and Overview

How can educators squeeze in time for the highly engaging learning activities that make schools enjoyable places for students (and staff) in the face of twin realities: the pressures to raise standardized test scores and to cover an already overcrowded curriculum resulting from state mandates and ever-growing lists of standards, required content, and recommendations to increase cultural literacy?

Research with our center's collaborative school districts indicates that this seemingly impossible task can be achieved. Using "enrichment clusters," students are guaranteed that at least some time every school week is devoted to the kinds of learning that make schools more engaging, enjoyable places.

In these schools, educators have created a time and a place within the overall weekly schedule that focuses students' attention on authentic learning applied to real-life problems. These two characteristics--authentic learning and real-life problems--are fundamental qualities of enrichment clusters. For this reason, I will discuss those terms in more detail before delving into specifics about enrichment clusters.

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Authentic Learning and Real-Life Problems Defined

Enrichment clusters are designed for authentic learning, and a key concept in defining authentic learning is *application*. Authentic learning consists of *applying* relevant knowledge, thinking skills, and interpersonal skills to the solution of real problems. These real-life problems share four criteria. First, a real problem requires a personal frame of reference for the individual or group pursuing the problem. In other words, the problem must involve an emotional or internal commitment in addition to a cognitive or scholarly interest. For example, stating that global warming or urban crime are "real problems" does not make them real for an individual or group unless they decide to do something to address the problem.

A second characteristic of real problems is that they do not have existing or unique solutions for persons addressing the problem. If an agreed-upon solution or prescribed strategies for solving the problem exist, then it is more appropriately classified as a "training exercise." Even simulations based on approximations of real-world events are considered training exercises if their main purpose is to teach predetermined content or thinking skills.

The third characteristic of a real problem is best described in terms of why people pursue these problems. The main reason is that they want to create new products or information that will change actions, attitudes, or beliefs on the part of a targeted audience. For example, a group of young people who gathered, analyzed and reported on data about television-watching habits in their community were contributing information that was new, at least in a relative way, and that would cause people to think critically about the television-viewing actions of young people.

The final characteristic of real problems is that they are directed toward a real audience. Real audiences consist of persons who voluntarily attend to information, events, services, or objects. A good way to understand the difference between a real and a contrived audience is to reflect on what some students did with the results of their local oral history project. Although they presented their findings to classmates, they did so mainly to rehearse presentation skills. Their authentic audience consisted of members of a local historical society and persons who chose to read about their research in the features section of a local newspaper.

To understand the essence of authentic learning is to compare how learning takes place in a traditional classroom with how someone might learn new material or skills in real-world situations. Classrooms are characterized by relatively fixed-time schedules, segmented subjects or topics, predetermined information and activities, tests and grades to

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determine progress, and an organizational pattern largely driven by the need to acquire and assimilate information and skills imposed from *outside* the classroom.

Contrast this type of learning with the more natural chain of events that takes place in real-world situations including research laboratories, business offices, or film studios. In these situations, the goal is to produce a product or service. All resources, information, schedules, and events are directed toward this goal, and evaluation (rather than grading) is a function of the quality of the product or service as viewed through the eyes of a client or consumer. Looking up new information, conducting experiments, analyzing results, or preparing a report is focused primarily on the present rather than storing it for a distant future. And it is these more enduring structures that have the greatest amount of transfer value for future use. When content and processes are learned in authentic, contextual situations, they result in more meaningful uses of information and problem-solving strategies than the learning that takes place in overly structured, prescribed classroom situations. If persons involved in authentic learning experiences are given some choice in the domains and activities in which they are engaged, and if present experience is directed toward realistic, personalized goals, this type of learning creates its own relevancy and meaning.

The Assembly Plant of the Mind

Authentic learning consists of investigative activities and the development of creative products in which students assume roles as first-hand investigators, writers, artists, or other types of practicing professionals. Although students pursue these kinds of involvement at a more junior level than adult professionals, the overriding purpose is to create situations in which young people are thinking, feeling, and doing what practicing professionals do in the delivery of products and services. These experiences should be viewed as vehicles through which students can apply their interests, knowledge, thinking skills, creative ideas, and task commitment to self-selected problems or areas of study.

In addition to this general goal, authentic learning has four objectives:

- To acquire advanced-level understanding of the knowledge and methodology used within particular disciplines, artistic areas of expression, and interdisciplinary studies;
- To develop authentic products or services that are directed primarily toward bringing about a desired impact on one or more specified audiences;
- To develop self-directed learning skills in the areas of planning, problem finding and focusing, organizational skills, resource utilization, time management, cooperativeness, decision making, and self-evaluation; and

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- To develop task commitment, self-confidence, feelings of creative accomplishment, and the ability to interact effectively with other students and adults who share common goals and interests.

Authentic learning should be viewed as the vehicle through which everything, from basic skills to advanced content and processes, "comes together" in the form of student-developed products and services. In much the same way that all the separate but interrelated parts of an automobile come together at an assembly plant, so, also, do we consider this form of enrichment as the assembly plant of mind. This kind of learning represents a synthesis and an application of content, process, and personal involvement. The student's role is transformed from one of lesson-learner to first-hand inquirer, and the role of the teacher changes from an instructor and disseminator of knowledge to a combination of coach, resource procurer, mentor, and, sometimes, a partner or colleague. Although products play an important role in creating authentic learning situations, a major concern is the development and application of a wide range of cognitive, affective, and motivational processes.

Enrichment Clusters

As indicated earlier, our experience with schools has shown that we can guarantee authentic learning experiences for students if the overall weekly schedule devotes some time focused exclusively on the kind of learning just discussed. During enrichment clusters, non-graded groups of students come together for approximately one-half day per week because they share common interests that bind them together and a willingness to work cooperatively within a relatively unstructured learning environment. Information collected in student portfolios assists students in making decisions about the general area(s) in which they might work. These general areas and the sample clusters that have been developed in various schools are listed in the accompanying chart (see pg. 6). Block scheduling arrangements, or selectively borrowing one class meeting per month from the regular schedule has allowed numerous schools to set aside the time necessary for enrichment clusters.

How It Works

The guidelines for enrichment clusters are easy to follow. First and foremost, all cluster activity is directed toward the production of a product or service. Enrichment clusters are not mini-courses! There are no unit or lesson plans. However, a series of

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start-up activities help students find and focus a problem that the majority of the group wants to pursue.

The facilitation of an enrichment cluster can be illustrated by following a group of students who started "The Video Production Company." Students selected this cluster because of their interest in the medium of video and its impact on audiences. The teacher who coordinated this cluster was familiar with the operation of simple video equipment and she also knew community persons who would volunteer assistance in this area. This cluster quickly became interdisciplinary in nature.

Product development required that students deal with scripting, story boarding, drama, set design, costumes, cinematography, and video editing. A unique feature of clusters is that everyone does not do the same thing. There is a division of labor that models real-world productivity, and everyone contributes in his or her own area of specialization. The group is connected by a common purpose, but each person is special because of the unique contribution that he or she makes to the overall enterprise.

Initial Questions

The initial meetings of the Video Production Company focused on answering the following questions.

1. What do people with an interest in video production do?
2. What products do they create and/or what services do they provide?
3. How, and with whom, do they communicate the results of their work?
4. What resources and materials are needed to produce high quality video products and services?
5. What steps need to be taken to have an impact on intended audiences?

[Note: Interested readers might use these questions to brainstorm the possible dimensions of the sample clusters listed in the right-hand column of the chart on the following page.]

Rather than providing students with answers to these questions, the teacher organized and guided but did not dominate the exploration process. General exploratory experiences took the form of guest speakers, displays of typical products from the field of video production, and videos of cinematographers at work who describe the products andservices that characterize the field of study. A library trip organized around a scavenger hunt helped students broaden their perspective about the products and process involved in different genre of video production.

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Sample Enrichment Clusters

General Areas	Enrichment Clusters
Literature and Language Arts	The Young Authors' Guild The Poets' Workshop The African-American Literary Society The Investigative Journalism Group *The Quarterly Review of Children's Literature*
Physical and Life Sciences	The Save-the-Dolphins Society The Physical Science Research Institute The Environmental Protection Agency The Experimental Robotics Team
The Arts	The Electronic Music Research Institute The Visual Artists' Workshops The Native American Dance Co. The Video Production Co. The Photographers' Guild
Social Sciences	The Junior Historical Society The Hispanic Cultural Awareness Center The Social Science Research Team The Geographic Society The Creative Cartographers' Guild
Mathematics	The Math Materials Publication Company The Math Mentors' Association The Mathematics Competitions League *The Math Puzzle Challenge Quarterly*
Computer Science	The Computer Graphics Design Team The Computer Games Production Company The Association for Computer Literacy The Desktop Publishing Company
Physical Education	The Physiology of Sport Study Group The Physical Fitness Support Group The Experimental Games Research Team
Industrial Arts and Home Economics	The Fashion Research Institute The Child Care Assistance Group The Architects' Guild

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Students discovered "How-To" books that provided valuable sources of methodological information. Brainstorming and webbing techniques helped students identify what they knew and what they were eager to discover. Mutual interests are a good starting point for accelerating motivation and promoting harmony, respect and cooperation among group members. Individual interests led to students interviewing local professionals and obtaining career-related literature from professional societies and associations. Resource people ranged from teachers and students involved in a local community-college communications program, to professionals at the local television station.

Once students understood what professionals in video production do, they decided on a project with common interest to the group. Problem finding and focusing is a crucial step, because the nature of the project or service will drive the rest of the investigation. Students may use their own interests to develop a documentary or fictional work, or they may opt to market their services to the student council, athletic association or parent-teacher association and make a school-orientation video or video-yearbook for the school. The enrichment cluster may divide into subgroups based on product selection. In the case of the Video Production Co., they decided to do an all-purpose program about activities taking place in the district's schools. Features such as Kindergarten Corner, the Inventors Forum, and the Science Connection were interspersed with general school news and interviews with students and teachers. The program aired weekly on the local cable-access television station.

The Teacher's Role

As the facilitator of the cluster, the teacher helped students select challenging projects, develop story boards and shooting schedules, and make arrangements for transportation and cooperation with other teachers. She also helped identify the jobs to be done, obtain the required resources, and develop an action plan. The teacher worked with the group on developing interpersonal skills, running effective meetings, and developing time-management skills. These activities should be student-driven, with the teacher playing an advisory role.

Wherever possible the teacher should encourage students to imitate the roles and responsibilities modeled by actual professionals working in the field of video production. This division of labor allows all students to have ownership of a component of the production and to find a niche that compliments their individual abilities, needs, and interests. Each person's specialty is valuable because of the essential contribution it makes to the whole.

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At all times the role of teacher is to coach, support and escalate the level of the performance to a higher level. Like any coaching position, teachers will quickly develop the experience to predict the problems and needs of the group before they arise. This requires a great deal of patience and restraint. Facilitators must allow students to experience frustration and struggle to turn setbacks into successes. Students must own the problem if they are ultimately to own the satisfaction of their success. As the work of the Video Production Co. evolved, the teacher helped students run company meetings and assess their progress.

Assessment and evaluation are integral parts of product development and should not be imposed from outside. Students should select criteria that they feel are important and judge their work against them. Assessment should be reflective, and the enrichment cluster should provide an atmosphere in which students feel comfortable taking creative risks. Product development should always be viewed as "a work in progress," and feedback should be used to improve the quality of the product. The ultimate evaluation is always a function of viewer feedback. When a product is complete, time should be taken to celebrate its success before moving on to the next project.

Part II: Two Key Issues In Developing Enrichment Clusters

1. Enrichment Clusters Are *Not* Mini-Courses!

One of the major problems we have encountered in enrichment cluster concept is a tendency on the parts of some facilitators to turn the clusters into mini-courses. Mini-courses are designed to teach a pres- -ed set of content or thinking skills to students. They may differ from regular instructional units in that they deal with topics not ordinarily covered in the regular curriculum, and they may use teaching strategies that are different from traditional recitation, drill, and testing practices. The ultimate purpose of a mini-course is to "put into the heads of students" a *pre-selected* set of content and/or process objectives. While this is not an unworthy goal (indeed, such is the make-up of most school learning experiences), we have something different in mind when it comes to the central purposes of an enrichment cluster.

An enrichment cluster is a learning situation that is purposefully designed to produce a product or service that will have an impact on an intended audience. All learning that takes place within a cluster, whether that learning is new content, new or improved thinking processes, or new interpersonal skills is what John Dewey called collateral learning. In other words, students learn new material within the context of a real and present problem. We purposefully avoid pre-specifying content or process objectives

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because we want students to follow the investigative methodology of practicing professionals in the real world. If we approached clusters by pre-specifying what and how students are going to learn, we would be returning to teaching practices that are typical of regular instruction.

Planning an enrichment cluster is, in many ways, an easier and more natural process than planning for traditional teaching. We need only determine (through discussions with students) a product or service and an intended audience, and then about acquire the resources and know-how we need to produce the product or deliver the service. Whatever information, materials, problem solving skills, or assistance we need automatically becomes relevant because we require it to produce our product or deliver our service. Imagine for a moment all of the things about arithmetic, geometry, geography, architecture, purchasing, aesthetics, computer graphics, advertising, photography, accounting, cooperativeness, leadership, and ornithology that a group of middle school students learned simply by deciding that they wanted to design, construct, and market "environmentally friendly" bird houses and feeders. And notice how this topic became naturally interdisciplinary, rather than having to artificially incorporate related disciplines.

Although enrichment clusters are modeled after natural (non-school) learning, a good deal of our teacher training taught us that we must begin by "first stating our objectives and learning outcomes," and then "design lessons to achieve these objectives." This traditional approach to pedagogy is a difficult habit to break. We hope that the suggestions that follow will serve as a guide for using an inductive approach to pedagogy rather than the prescribed/presented approach that typifies most regular curriculum and mini-course activities.

2. Hands On Should Not Mean Brains Off!

A second problem we encountered in our research on enrichment clusters is a failure on the parts of some facilitators to escalate the *level* of knowledge pursued within a cluster. We have observed many exciting, fun-filled activities, and this kind of enjoyment of learning is unquestionably one of the most desirable features of a good cluster. At the same time, some critics have said that certain clusters are nothing more than "fun-and-games," and others have said that the clusters are "soft on content," that they don't represent "real school." We can guard against these criticisms by examining each cluster with an eye toward what constitutes authentic and rigorous content within the field or fields of study around which the cluster is organized. For example, in the cluster on bird houses and feeders mentioned above, the teacher/facilitator began by helping the students obtain some books on ornithology, marketing, and advertising as well as how-to books on birdhouse and feeder construction. The students studied maps to learn about birds

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indigenous to their area of the country and their migratory habits; they learned about anatomy in order to determine the sizes of bird houses and openings, and they studied different kinds of preferred diets, colors, mating habits, and optimal locations. Display boards with attractive drawings and photographs were prepared to help market their products, and printed material (produced with the aid of desktop publishing software) accompanied each bird house and feeder that was sold. The students became specialists in the various subtopics, the tasks required to develop high quality products, and the procedures for researching, constructing, and marketing their products.

The teacher/facilitator's role is crucial in escalating the content level of a cluster. Although it is not necessary for the teacher/facilitator to be thoroughly familiar with the content area(s) beforehand, it is necessary (1) to have an interest in the topic and a "feel" for content escalation, (2) to know how to find the resources that will advance the level of study, (3) to organize cluster activities so that knowledge escalation is pursued as part and parcel of the hands-on activities, and (4) to document the extent and level of advanced content that was pursued in the cluster. Left to their own devices, the students in the bird house cluster might have skipped the underlying research in ornithology and marketing in favor of the sawing, hammering, and painting that was involved in the cluster's activities. If such were the case, the cluster experience would have prevented students from having opportunities for higher levels of learning. Indeed, it could have fallen prey to the "fun-and-games" criticism that a casual observer might have made.

In the guide that follows, we will offer suggestions for raising questions and obtaining resources that will assist teacher/facilitators in the process of content escalation. This process is obviously more demanding than merely guiding the hands-on aspects of a cluster, but it is also an opportunity for offering creative suggestions about the direction that the work of a cluster can take, and of guaranteeing that powerful learning is a hallmark of any cluster.

Part III: Guidelines for Developing an Enrichment Cluster

The following guidelines are designed to assist you in planning an authentic enrichment cluster and in writing a cluster description that will be both attractive and accurate so far as your expectations of students are concerned. Each item below is correlated with the box on the Enrichment Cluster Planning Guide on the following page, and examples are provided to help you plan your own cluster.

As you review the guidelines and begin to fill out the Planning Guide, try to avoid specifying what students will do and learn in the cluster, at least until you have completed Item No. 4, and prior to writing the title and description of your cluster (Item No. 6).

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Enrichment Cluster Planning Guide

Joseph S. Renzulli

1. **Getting-Started-Ideas** (Thoughts resulting from *Inspiration: Targeting My Ideal Teaching Situation*)

2. General Area(s) of Knowledge

3. Specific Area(s) of Knowledge

4. The Key Questions

5. Resources

6. Title and Description

1. Getting Started

Think about some of the things in which you have had a personal interest. Use these thoughts to write down a few words about an enrichment cluster you might like to offer. We will call these early thoughts your "getting-started-ideas." Here are a few topics that others have written down as getting-started-ideas. *Poetry. Environmental Studies. Horses. Rock Wall Building. Landscaping. Science Fiction. Cartooning. Medieval Castles. Math Puzzles. Inventions. Film Making. Conservation. Model Airplane Design. World War II. Photography. Sports. Cooking. Architecture. City Planning. Bird Watching. History of Old Movies. Pottery. Ancient Rome.* Don't worry if you are not certain about a topic at this early stage of the process. Write down several possibilities just to get the ball rolling.

2. General Area(s) of Knowledge

Use the following list to indicate the general area or areas of knowledge into which your getting-started-idea falls:

Language Arts, Literature, and the Humanities
The Arts
Physical and Life Sciences
Social Sciences
Mathematics
Computers
Home Economics/Industrial Technology
Physical Education
Other (Specify)

3. Specific Area(s) of Knowledge

Indicate the specific area(s) within the general area(s) upon which your cluster will focus. For example, if the general area is The Arts, specific areas might be puppetry, fashion design, musical composition, modern dance, ceramics, or water colors. In the general area of the Social Sciences, specific areas might be public opinion polling, geography, local history, genealogy, demography, or animal behavior. In the general area of Language Arts, Literature, and the Humanities, specific areas might be short stories, poetry, journalism, play writing, biography, literary criticism, and essays on contemporary topics. An all-purpose cluster in any one of these general areas could include opportunities for different students or small groups to work on several of the specific areas.

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4. The Key Questions

The *sine qua non* (indispensable feature) of an enrichment cluster is that students act as practicing professionals in the development of a product or service. We can achieve this critical requirement by considering our getting-started-idea and the specific area(s) of knowledge from Numbers 1 and 3 above, and then answering the following five questions:

1. What do people who are interested in this area do?
2. What products do they create and/or what services do they provide?
3. How, and with whom, do they communicate the results of their work?
4. What resources and materials are needed to produce high quality products and services?
5. What steps need to be taken to have an impact on intended audiences?

[Note: These questions should also be used with students at the start of a cluster. In other words, students should have the opportunity to "discover" what you have found, and perhaps, to find some things that go beyond your own search.]

The answers to some of the above questions are obvious. Playwrights write plays and film makers make films! [Note: The actual subjects of students' plays and films should be decided on by the students themselves after the cluster has gotten under way. We will discuss the process for exploring these kinds of decisions in a later section of this guide.] But some areas are not so obvious. There are, for example, many different kinds of photographers (portrait, landscape, fashion, news, to mention a few); and there are dozens of aspects about World War II that might be topics for individual or small group research. We purposefully want to leave the range of options for products and services open so that even within a preselected topic area, students will still have the opportunity to make decisions about what they will produce.

Unless you are already an expert in the specific area of knowledge upon which your cluster will focus, answers to the above questions will require some digging on your part. This digging is important because it will guide you in professionalizing the cluster, and it will provide you with background information to help escalate the content level and the level of inquiry of your cluster. Equally important is the personal growth that we, as adults, always experience when we learn something new, and the enthusiasm for a topic that almost always results from new learning. In other words, the affective value of learning and authentically applying new information on the parts of adults will unquestionably result in more informative teaching and in more enthusiasm for the work you do in the cluster. Some writers have said that this kind of growth-through-personal-

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involvement in new learning is a *better* kind of staff development than sitting through yet another workshop by yet another visiting expert!

5. Identifying Resources

There are only two ways to answer the questions listed above. The first is to find a practicing professional from the specific area of knowledge, and discuss the questions with him or her. The second is to find one or two books that describe the purpose and methodology of a particular field. Every field of knowledge has general (introductory) textbooks and "how-to" books that describe the actual work done in particular fields. Just examining the titles of the following books will give you an idea about the type of book for which you should be looking:

How To Trace Your Family Tree
The Restoration Manual
Usborne Introduction to Chemistry
The Amateur Meteorologist
Writing Family Histories and Memoirs
The Book of Where and How to Be Naturally Geographic
My Backyard History Book
The Amateur Naturalist: Explorations and Investigations
Understanding History: A Primer of Historical Method
Ecology: A Practical Introduction With Projects and Activities
Usborne Guide to Fashion Design
Experimenting With Inventions
Understanding and Collecting Rocks and Fossils
A Student's Guide to Volunteering
How To Write and Give A Speech
The Craft of Interviewing
Oral History: A Guide for Teachers
Getting Published
Kid Vid: Fundamentals of Video Production
A Students Guide To Conducting Social Science Research

These titles are just a few of the hundreds of books that focus on the how-to or investigative methodology of various subject matter areas. Most of them were written for young audiences or introductory investigators, and in most cases, they can be used as

resource guides for students as well as adults who are facilitating a cluster. The level of a cluster can also be escalated by obtaining introductory college level textbooks in disciplines such as Psychology, Sociology, Biology and the other fields of study typically included in college curricula. These books are especially valuable for identifying basic principles, major concepts, and the types of topics that are typically studied in a particular discipline. Some of these books include laboratory manuals that guide students through actual research activities in particular fields of study.

Three Clicks On the Web. A marvelous new resource for all types of advanced level resources is the Internet and the World Wide Web. If you are not already familiar with this resource it would be a good idea to talk with someone who is an experienced web user or to take a workshop on this topic.

Just for the fun of it, I picked a topic in which I have an interest but limited background, and conducted a search. I started by going to Yahoo, a "search engine," and clicked on Social Science. In addition to listing numerous topics related to this general field, a dialogue box allowed me to type in and search for the topic, "oral history." This second click yielded 52 site matches for oral history. I then clicked on one of these matches entitled "Oral History Questions." To my wonder and amazement, I was presented with and was able to print out four pages of questions that could be used in an oral history interview. Among the other 50 sites are descriptions of oral history projects, oral history associations and university centers that provide resources to interested persons, and subtopics such as Vietnam Veterans and the Oral History of Jazz. Wow! What a resource. The world of advanced level information is literally at our fingertips, and we need to learn how to use it so we can escalate the level of content and investigative methodology in our enrichment clusters and in all of our teaching activities.

6. Title and Description

Now that you have had the opportunity to explore the key questions and examine resources related to your specific area of knowledge, it is time to think of a creative title for your cluster and to write a cluster description. The title should be both snappy and, at the same time, give some indication that the cluster will deal with serious subject matter. Sometimes this twofold purpose can be accomplished by using a colon in the title. Thus, for example, a title such as *Dig That Dance: A Choreographic Workshop* attracts attention and points out a recognized area of the arts. Other titles that accomplish this purpose are: *Lights, Camera Action: Techniques of Video Production; Dear Mr. Shakespeare: Play Writing for Young Authors;* and *The Mighty Duck Savers: Preserving the Ecology of Local Wetlands*. Titles can also define the type of work that might be done in a cluster.

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Examples are: *The Desktop Publishing Company; The Local History Research Team; The Female Mathematics Support Group;* and *The Creative Furniture Design Guild.*

The cluster description should also convey two messages. First, the description should point out the kinds of questions that might be raised and/or the type of information that will be studied. Second, and perhaps most important so far as focus is concerned, is the types of products that will be produced in the cluster. Remember, the *sine qua non* of a cluster is that students will produce a product or prepare some kind of service. It is essential that this feature be mentioned in your cluster description. Here are a few examples:

Flight School: Designing and Building Your Own Aircraft

Basic principles of aerodynamics will be studied to learn what keeps airplanes in the air. You will design, build, and test fly your own model plane. We will have a contest to see whose plane flies the highest, farthest, and longest.

Gamers Institute

Explore the world of math games and puzzles with parent Lynn Weeks. Investigate visual games and optical illusions, dice games and probability, origami, games of logic, problem solving brain teasers, and more. Learn how a games company develops their popular games. Create your own board game or puzzle, and share with the group in a "Game Meet".

Conclusion: The Importance of Authentic Learning

Authentic learning is important for several reasons. First, schools should be enjoyable places that students want to attend rather than places they endure as part of their journey toward assimilation into the job market and the adult world. Second, schools should be places where students participate in and prepare for intelligent, creative, and effective living. This type of living includes learning how to analyze, criticize, and select from among alternative sources of information and courses of action; how to think effectively about unpredictable personal and interpersonal problems; how to live harmoniously with one another while remaining true to one's own emerging system of attitudes, beliefs, and values; and how to confront, clarify, and act upon problems and situations in constructive and creative ways. Finally, authentic learning is important because our society and democratic way of life are dependent upon an unlimited reservoir of creative and effective people who know how to put knowledge to work in real-world situations.

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Research Monograph and Videotape (Including a Reproducible Training Packet) on Schoolwide Enrichment available from:

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Reis, S. M., Gentry, M., & Park, S. (1995). ***Extending the pedagogy of gifted education to all students*** (Order No. 95118). $10.00

Enrichment clusters: Using high-end learning to develop talents in all students (Videotape set, Order No. V955). $85.00

Or contact our Web Site:
http://www.gifted.uconn.edu

Also AVAILABLE ON THE ABOVE WEB SITE:

Renzulli, J. S. (1997). ***How to develop an authentic enrichment cluster.*** [This article can also be obtained at no cost by writing to the address above.]

Related resources including schools using enrichment clusters and sources for How-To books are available from:

The Schoolwide Enrichment Model Network
1733 Storrs Road
Holiday Mall
Storrs, CT 06268
(860)429-1653

Or contact our Web Site:
http://www.neca.com/~semnet/